

CLAIMS

1. An elevator rope slippage detecting device for detecting presence/absence of slippage between a rope that moves together with a car traveling in a hoistway, and a pulley around which the rope is wound and which is rotated through movement of the rope, characterized by comprising:

a pulley sensor for generating a signal in accordance with rotation of the pulley;

a car speed sensor for directly detecting a speed of the car; and

a processing device having: a first speed detecting portion for obtaining a speed of the car based on information from the pulley sensor; a second car speed detecting portion for obtaining a speed of the car based on information from the car speed sensor; and a determination portion for determining the presence/absence of slippage between the rope and the pulley by comparing the speed of the car obtained by the first speed detecting portion and the speed of the car obtained by the second speed detecting portion with each other.

2. An elevator rope slippage detecting device according to Claim 1, characterized in that the car speed sensor is a Doppler sensor provided to the car, for obtaining the speed of the car by

measuring a difference between a frequency of an oscillating wave irradiated toward a reflecting surface provided in the hoistway and a frequency of a reflected wave of the oscillating wave as reflected by the reflecting surface.

3. An elevator rope slippage detecting device according to Claim 2, characterized in that the reflecting surface is provided by a side of the car and extends along a travel direction of the car.

4. An elevator rope slippage detecting device according to Claim 1, characterized in that the car speed sensor is a Doppler sensor provided to at least one of upper and lower end portions of the hoistway, for obtaining the speed of the car by measuring a difference between a frequency of an oscillating wave irradiated toward a reflecting surface provided in the car and a frequency of a reflected wave of the oscillating wave as reflected by the reflecting surface.

5. An elevator rope slippage detecting device according to Claim 1, characterized in that the car speed sensor is a distance sensor provided to one of an end portion of the hoistway and the car, for obtaining the speed of the car by measuring a reciprocation time of an energy wave between a reflecting surface, which is provided

to the other one of the end portion of the hoistway and the car, and the car speed sensor.

6. An elevator apparatus characterized by comprising:
 - a car that travels in a hoistway;
 - a rope that moves in accordance with movement of the car;
 - a pulley around which the rope is wound, the pulley being rotated through the movement of the rope;
 - a pulley sensor for generating a signal in accordance with rotation of the pulley;
 - a car speed sensor for directly detecting a speed of the car;
 - a processing device for detecting absence/presence of slippage between the rope and the pulley by obtaining a speed of the car based on information from the pulley sensor and a speed of the car based on information from the car speed sensor and comparing the speeds of the car with each other; and
 - a control device for controlling operation of an elevator based on information from the processing device.